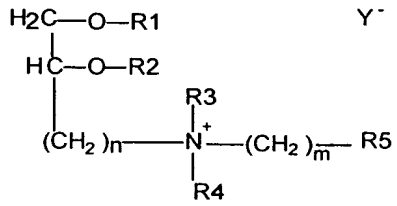
WHAT IS CLAIMED IS:

1. A compound of the formula

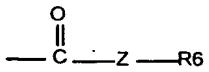


wherein

R_1 and R_2 are independently H, linear or branched, unsubstituted or substituted C_{1-23} alkyl, acyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0 to 4.

R_3 and R_4 are independently linear or branched, unsubstituted or substituted C_{1-23} alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

R_5 has the structure



wherein Z is selected from the group consisting of O, S, NR_1, NH, Se, and CR_7R_8;

R_6 is selected from the group consisting of absent, H, R1, R2, R3 and R4;

n is 1 to 6;

m is 1 to 10;

Y is a pharmaceutically acceptable anion; and

R_7 and R_8 independently or in combination are H or alkyl groups as defined for R_1 and R_2;

wherein if Z is O, n is 1, and m is 3, then R_6 is selected from the group defined for R_3 and R_4 and wherein R_1 and R_2 are not both H.

2. A compound according to Claim 1 wherein R_1 and R_2 are C_{10} to C_{20} alkyl or alkenyl groups, Z is O and R_6 is an amino acid or peptide linked to Z as an ester.

3. A compound according to Claim 1, wherein Z is O, R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $(CH_2)_8CH=CH(CH_2)_7CH_3$, and R_3 and R_4 are methyl.

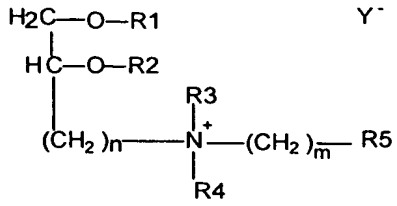
4. A compound according to Claim 1, wherein R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups.

5. A compound according to Claim 1, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

6. A compound according to Claim 5, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

7. A compound according to Claim 6 wherein R_3 and R_4 are methyl groups.

8. A compound of the formula

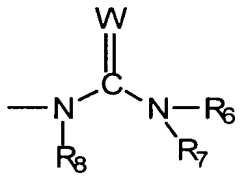


wherein

R_1 and R_2 are independently H, linear or branched, unsubstituted or substituted C_{1-23} alkyl, acyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

R_3 and R_4 are independently linear or branched, unsubstituted or substituted C_{1-23} alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

wherein R_5 has the structure



wherein

R_6, or R_6 together with R_7, is selected from the group defined for R_1, R_2, R_3 and R_4 and optionally further comprises a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, mono, di- or polysaccharide, or other bioactive or pharmaceutical agent;

R_8 is absent, or is H or an alkyl group selected from the group consisting of R_1, R_2, R_3 and R_4 and wherein R_8 may be joined to R_6 or R_7 so as to form a ring;

W is O, NR_{10}, NH, S, or Se;

R_{10} is an alkyl group as defined for R_1 and R_2;

n is 1 to 6;

m is 1 to 10; and

Y is a pharmaceutically acceptable anion;

wherein R_1 and R_2 are not both H.

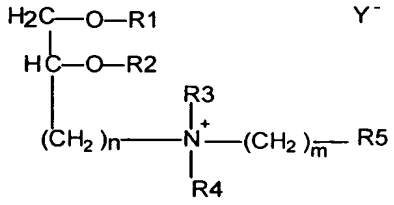
9. A compound according to Claim 8, wherein R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups.

10. A compound according to claim 9 wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

11. A compound according to Claim 10, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

12. A compound according to Claim 11 wherein R_3 and R_4 are methyl groups.

13. A compound of the formula



wherein

R_1 and R_2 are independently H, linear or branched, unsubstituted or substituted C_{1-23} alkyl, acyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms k is 0-4;

R_3 and R_4 are independently linear or branched, unsubstituted or substituted C_{1-23} alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

wherein R_5 is $-O-R_6$ such that R_5-O-R_6 comprises an ether linkage, wherein R_6 is selected from the group consisting of amino acids, peptides, polypeptides, proteins, nucleic acids, nucleotides, polynucleotides, monosaccharides, disaccharides, polysaccharides, bioactive agents, pharmaceutical agents, and linear or branched, unsubstituted or substituted C_{1-23} heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

n is 1 to 6;

m is 1 to 10;and

Y is a pharmaceutically acceptable anion; and

wherein R_1 and R_2 are not both H.

14. A compound according to Claim 13, wherein R_1 and R_2 are both alkyl groups or are both alkenyl groups and R_6 comprises an amino acid or peptide selected from the group consisting of amino acids and peptides which are non-polar, amino acids

and peptides which are polar and uncharged, and amino acids and peptides which are negatively charged at physiological pH.

15. A compound according to Claim 13, wherein R_1 and R_2 are both alkyl groups or are both alkenyl groups and R_6 comprises a bioactive moiety.

16. A compound according to Claim 13, wherein R5 is selected from the group consisting of monosaccharides, disaccharides, and polysaccharides.

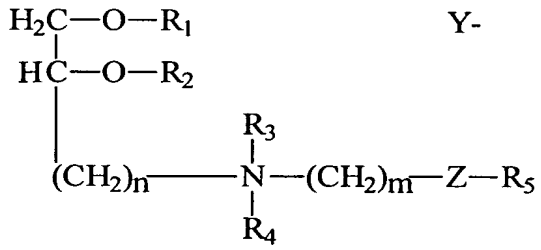
17. A compound according to Claim 13, wherein R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups.

18. A compound according to Claim 17, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

19. A compound according to Claim 18, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

20. A compound according to Claim 19, wherein R_3 and R_4 are methyl groups.

21. A compound having the structure



wherein R_1 and R_2 are independently H, linear or branched, unsubstituted or substituted C_{1-23} alkyl, acyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from -O-$(CH_2)_k$-CH_3, -S-$(CH_2)_k$-CH_3, X-$(CH_2)_k$-, wherein X is a halide, and -N($(CH_2)_k$-$CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

R_3 and R_4 are independently linear or branched, unsubstituted or substituted C_{1-23} alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and

aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from -O-$(CH_2)_k$-CH_3, -S-$(CH_2)_k$-CH_3, X-$(CH_2)_k$-, wherein X is a halide, and -N($(CH_2)_k$-$CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

wherein R_5 is selected from the group defined for R_3 and R_4 and optionally further comprises a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, monosaccharide, disaccharide or polysaccharide, or other bioactive or pharmaceutical agent; and

Z is NH, or S;

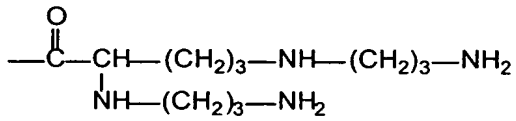
n is 1 to 6;

m is 1 to 10;and

Y is a pharmaceutically acceptable anion;

wherein R_1 and R_2 are not both H, and

wherein if Z is NH and n is 1 and m is 2 to 6, and R_1 and R_2 separately or together are C_1-C_{23} alkyl or C(O)-C_1-C_{23}, and R_3 and R_4 separately or together are H or unbranched alkyl C_1-C_6, then R_5 is not -$(CH_2)_z$$NH_2$ where z is 2-6; or -$(CH_2)_3$-NH-$(CH_2)_4$-NH_2; or -NH-$(CH_2)_3$-NH-$(CH_2)_4$-NH$(CH_2)_3$-NH_2, C(O)-fluorescein, or



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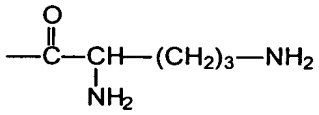
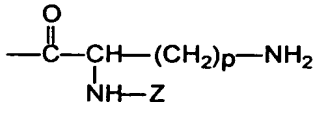


or



where p is 2-5, Z is H or other groups attached by amide or alkyl amino groups.

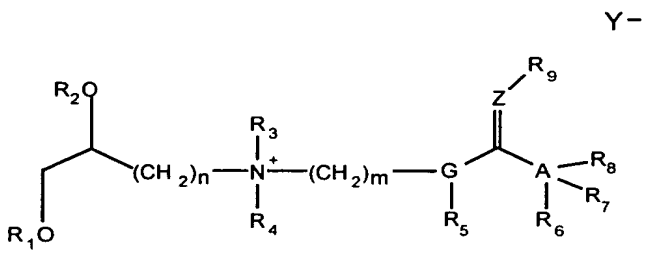
22. A compound according to Claim 21, wherein R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups.

23. A compound according to Claim 21, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

24. A compound according to Claim 23, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

25. A compound according to Claim 24, wherein R_3 and R_4 are methyl groups.

26. A compound having the structure:



wherein

R_1 and R_2 are independently H, linear, branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, acyl, alkylene, or heteroalkyl groups having from 0 to 6 sites of unsaturation, or cyclic or aryl groups, said cyclic or aryl groups containing up to five heteroatoms, wherein the substituent groups are selected from the group consisting of -O-$(CH_2)_k$-CH_3, -S-$(CH_2)_k$-CH_3, X-$(CH_2)_k$-, wherein k is 0 to 4, wherein X is a halide, and -N($(CH_2)_k$-$CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms;

R_3 and R_4 are independently linear, branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, acyl, alkene, or heteroalkyl groups having from 0 to 6 sites of unsaturation, or cyclic

or aryl groups, said cyclic or aryl groups containing up to five heteroatoms, wherein the substituent groups are selected from the group consisting of -O-$(CH_2)_k$-CH_3, -S-$(CH_2)_k$-CH_3, X-$(CH_2)_k$-, wherein k is 0 to 4, wherein X is a halide, and -N($(CH_2)_k$-$CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0 to 4;

R_5 is absent, H or an alkyl group as defined for R_1 and R_2; R_5 through R_{10} independently or in combination are absent, or are H or alkyl groups as defined for R_1 and R_2 and, optionally, further comprise a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, mono-, di- or polysaccharide, or other bioactive or pharmaceutical agent;

G is absent, O, N, S or Se;

Z is O, N, S, or Se;

A is O, N, S, Se, or C;

n is 1-6;

m is 1-10;

Y is a pharmaceutically acceptable anion;

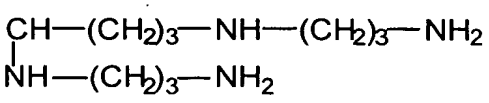
wherein if G is N and Z is O, then A is not C;

wherein if G is O and Z is O then A is not C;

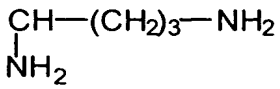
wherein if G is absent, Z is O, A is O, R_6 and R_7 are absent, n is 1, and m is 3, then R_8 is not absent or H;

wherein R_1 and R_2 are not both H;

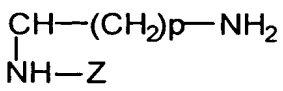
and wherein if G is NH and n is 1 and m is 2 to 6, and R_1 and R_2 separately or together are C_1-C_{23} alkyl or alkenyl or C(O)-C_1-C_{23} alkyl or alkenyl, and R_3 and R_4 separately or together are H or unbranched alkyl C_1-C_6, and Z is O then A is not fluorescein, or



or



or



where p is 2-5, Z is H or other groups attached by amide or alkyl amino groups.

27. The compound of Claim 26 having a primary amine within 8 atoms of the quaternary nitrogen.

28. The compound of Claim26, wherein if any of R_5-R_{10} are amino acids or peptides they are selected from the group consisting of those amino acids and peptides which are non-polar, amino acids and peptides which are polar and uncharged, and amino acids and peptides which are negatively charged at physiological pH.

29. The compound of Claim 26, wherein if any of R_5-R_{10} are amino acids or peptides they comprise at least one amino acid not generally found in natural organisms.

30. A compound according to Claim 26, wherein R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups.

31. A compound according to Claim 26, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

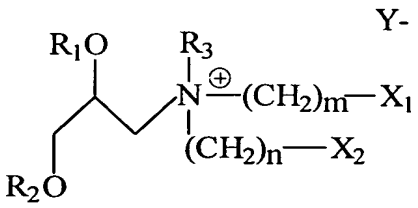
32. A compound according to Claim 31, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

33. A compound according to Claim 32 wherein R_3 and R_4 are methyl groups.

34. Cytofectin formulations comprising the compounds of Claim 26 in a physiologically or isotonically acceptable solution.

35. Cytofectin formulations comprising the cationic lipids of Claim 26 and a co-lipid selected from the group consisting of neutral lipids, phospholipids, and cholesterol in a suitable carrier solution.

36. A compound having the structure:



wherein R_1 and R_2 are independently H, linear or branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, acyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0 to 4;

R_3 is a linear or branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, alkylene or heteroalkyl group having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0 to 4;

X_1 and X_2 are independently selected from the group consisting of NR_4R_5 and OR_4, wherein R_4 and R_5 are selected from the group consisting of R_1 as defined above, amino acids, peptides, polypeptides, proteins, nucleic acids, nucleotides, polynucleotides, monosaccharides, disaccharides, polysaccharide, other bioactive agents and other pharmaceutical agents;

n is 1 to 8;

m is 1 to 8;

wherein R_1 and R_2 are not both H.

37. A compound according to Claim 36, wherein R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups.

38. A compound according to Claim 36, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

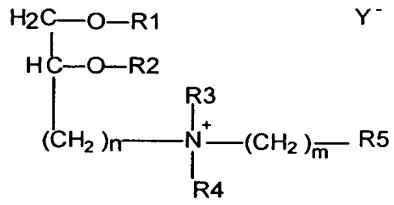
39. A compound according to Claim 38, wherein R_3 is selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein and n and m are 1-5.

40. A compound according to Claim 39, wherein R_3 is a methyl group.

41. A compound according to Claim 36, wherein X1 and X2 are NR_4R_5 and R_4 and R_5 are H.

42. A compound according to Claim 35, wherein n and m are 2-5.

43. A compound of the formula:



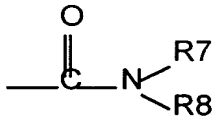
wherein

R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups;

R3 and R4 are independently linear or branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from -O-$(CH_2)_k$-CH_3, -S-$(CH_2)_k$-CH_3, X-$(CH_2)_k$-, wherein X is a halide, and -N($(CH_2)_k$-$CH_3)_2$,

wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

R_5 has the structure



R_7 and R_8 are independently selected from the group defined for R_1, R_2, R_3 and R_4 and optionally further comprise a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, mono-, di- or polysaccharide, or other bioactive or pharmaceutical agent;

n is 1 to 6;

m is 1 to 10; and

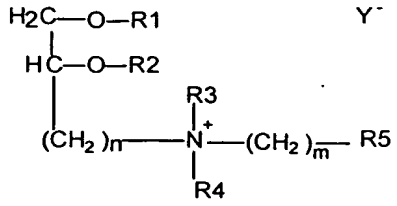
Y is a pharmaceutically acceptable anion.

44. A compound according to Claim 43, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

45. A compound according to Claim 44, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

46. A compound according to Claim 45, wherein R_3 and R_4 are methyl groups.

47. A compound of the formula:

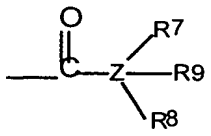


wherein

R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups;

R_3 and R_4 are independently linear or branched, unsubstituted or substituted C_{1-23} alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from -O-$(CH_2)_k$-CH_3, -S-$(CH_2)_k$-CH_3, X-$(CH_2)_k$-, wherein X is a halide, and -N($(CH_2)_k$-$CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

R_5 has the structure



Z is C;

R_7, R_8 and R_9 are independently selected from the group defined for R_1, R_2, R_3 and R_4 and optionally further comprise a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, mono-di- or polysaccharide, or other bioactive or pharmaceutical agent;

n is 1 to 6;

m is 1 to 10; and

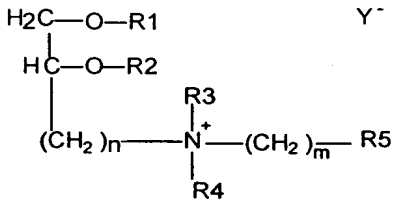
Y is a pharmaceutically acceptable anion.

48. A compound according to Claim 47, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

49. A compound according to Claim 48, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

50. A compound according to Claim 49 wherein R_3 and R_4 are methyl groups.

51. A compound of the formula

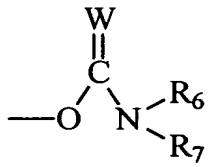


wherein

R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups;

R_3 and R_4 are independently linear or branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$, wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

wherein R_5 has the structure



wherein

R_6 or R_6 together with R_7 are selected from the group defined for R_1, R_2, R_3 and R_4 and optionally further comprises a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, mono, di- or polysaccharide, or other bioactive or pharmaceutical agent;

W is O, NR_8, NH, S, or Se;

R_8 is an alkyl group as defined for R_1 and R_2;

n is 1 to 6;

m is 1 to 10; and

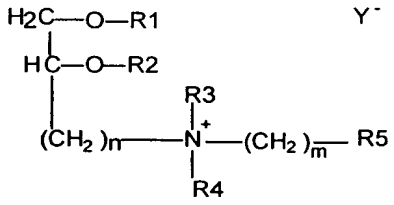
Y is a pharmaceutically acceptable anion.

52. A compound according to Claim 51, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

53. A compound according to Claim 52, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

54. A compound according to Claim 53, wherein R_3 and R_4 are methyl groups

55. A compound of the formula



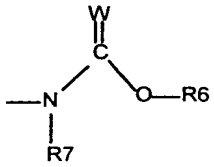
wherein

R_1 and R_2 are saturated or unsaturated C_{10}-C_{18} alkyl groups;

R_3 and R_4 are independently linear or branched, unsubstituted or substituted $C_{1\text{-}23}$ alkyl, alkylene or heteroalkyl groups having from 0 to 6 sites of unsaturation, cyclic and aryl groups, said groups comprising from 0 to 5 heteroatoms wherein said heteroatoms are not the first atoms in said groups, wherein the substituent groups are selected from $-O-(CH_2)_k-CH_3$, $-S-(CH_2)_k-CH_3$, $X-(CH_2)_k-$, wherein X is a halide, and $-N((CH_2)_k-CH_3)_2$,

wherein the alkyl groups of said substituents comprise from 0 to 2 heteroatoms and k is 0-4;

wherein R_5 has the structure



wherein R_6, or R_6 together with R_7, is selected from the group defined for R_1, R_2, R_3 and R_4 and optionally further comprises a chemically linked amino acid, peptide, polypeptide, protein, nucleic acid, nucleotide, polynucleotide, mono, di- or polysaccharide, or other bioactive or pharmaceutical agent;

W is O, NR_8, NH, S, or Se;

R_8 is an alkyl group as defined for R_1 and R_2;

n is 1 to 6;

m is 1 to 10; and

Y is a pharmaceutically acceptable anion.

56. A compound according to Claim 55, wherein R_1 and R_2 are identical and are selected from the group consisting of $C_{14}H_{29}$ and $C_{12}H_{25}$.

57. A compound according to Claim 56, wherein R_3 and R_4 are selected from the group consisting of C_1-C_5 alkyl groups and C_1-C_5 heteroalkyl groups having one heteroatom therein.

58. A compound according to Claim 57 wherein R_3 and R_4 are methyl groups.

59. A method of delivering an anionic molecule into a cell comprising the steps of

(a) contacting the anionic molecule with a formulation comprising an effective amount of any of the cationic lipids of Claim 26 to form a complex with the lipid; and

(b) contacting a cell with the lipid complex formed in step (a);

whereby a biologically effective amount of the anionic molecules are inserted into the cell.

60. The method of Claim 59, wherein said cells are *in vitro*.

61. The method of Claim 59, wherein said cells are *in vivo*.

62. The method of Claim 62, wherein said cells are in an assay selected from the group consisting of murine lung transfection, murine intraperitoneal tumor, murine intramuscular and porcine or rabbit intraarterial.

63. A method of delivering an anionic molecule into a cell comprising the steps of

(a) contacting the anionic molecule with a formulation comprising an effective amount of any of the cationic lipids of Claim 36 to form a complex with the lipid; and

(b) contacting a cell with the lipid complex formed in step (a);

whereby a biologically effective amount of the anionic molecules are inserted into the cell.